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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,962	02/27/2004	Ernesto Lasalandra	854063.747	6688

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EXAMINER	
AMRANY, ADI	

ART UNIT	PAPER NUMBER
2836	

DATE MAILED: 07/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/788,962	LASALANDRA ET AL.	
	Examiner	Art Unit	
	Adi Amrany	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 February 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Acknowledgement is made of applicant's claim for foreign priority based on an application filed in Italy on February 28, 2003. It is noted, however, that applicant has not filed a certified copy of the TO2003A 000142 application as required by 35 U.S.C. 119(b).

Drawings

2. The drawings are objected to because of the following minor informalities:

a. Figure 1; an "A" is missing to label the magnitude of the force vector (specification, page 2, line 22).

b. Figure 2, the inertial sensor is mislabeled "10". The reference label should be a "1", as called for in the specification (page 4, line 9).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering

of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities:

c. Page 5; line 1; reference label 2 refers to a "stator", which is incorrectly typed "rotor."

d. Page 5, line 11; the sentence incorrectly refers to figure 1. Figure 2 is the correct drawing showing the linear sensors with capacitive unbalancing.

Appropriate correction is required.

Claim Objections

4. Claim 3 is objected to because the word "receives" is missing after "comparator, which" in line 3.

5. Claim 8 is objected to because the inverting input is a component of the subtractor node. It is recited in claim 8 as a separate device within the transduction means (line 7). Claim 8 further recites the limitation of "inverting input of said subtractor node" (line 9).

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 5 and 12 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 5 and 12 are rejected because the term "substantially" renders them indefinite. See MPEP §2173.05(b). Although the specification provides the basis for the limitation of a $1/\sqrt{2}$ ration between the high and low threshold values, there is no disclosure regarding deviation from this ratio value. In light of the specification, one of ordinary skill would not understand what is being claimed by the use of "substantially".

8. Claim 17 is rejected for being indefinite because of the term "sequentially". The specification does not provide basis for the limitation that the transduction circuit sequentially receives acceleration values from the sensors. The specification also does not provide any discussion regarding the order of transmitting acceleration signals or whether certain signals have priority over others. Therefor, claim 17 is interpreted as reciting that each signal is received and calculated one at a time. This "sequential" calculation of acceleration signals the standard method of operation of a processor, which, although calculates billions of operations each second, calculates those operations "sequentially."

Appropriate correction is required.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1, 4, 9-11, 13-14, 17-18 and 21-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Blank (US 6,274,948).

With respect to claim 1, Blank discloses a multidirectional inertial device having a plurality of preferential detection axes (figures 1, 3; column 4, lines 29-36), comprising:

inertial sensor means (figure 1, item 3; column 4, lines 29-31), which are sensitive to accelerations parallel to said preferential detection axes;

transduction means (figure 3, items 32-33; column 5, lines 36-38), coupled to said inertial sensor means and supplying a plurality of acceleration signals, each of which is correlated to an acceleration parallel to a respective one of said preferential detection axes;

first comparison means (figure 3, item 34; column 5, lines 42-50), connection to said transduction means and supplying a pre-determined logic value when at least one of said acceleration signals is greater than a respective upper threshold; and

second comparison means (column 6, lines 23-52), connected to said transduction means and to said first comparison means for supplying said pre-

determined logic value when each of said acceleration signals is greater than a respective lower threshold, which is smaller than the respective upper threshold.

With respect to claim 4, Blank discloses the device according to claim 1, and further discloses said upper thresholds are equal to one another and said lower thresholds are equal to one another (figure 5; column 6, lines 23-52). Blank discloses that the signals derived from each axis are compared to equal threshold levels to produce outputs LEV1, LEV2 or LEV3. The device them compares the LEVx value of each axes to determine the direction of acceleration/de-acceleration.

With respect to claim 9, Blank discloses a portable electronic apparatus (figure 1, item 3); comprising a device for reactivation from stand-by (figure 1, item 5; column 4, lines 39-44). Blank further discloses said device includes a multidirectional inertial device that includes: inertial sensor means, transduction means, first comparison means, and second comparison means, as discussed above in the rejection of claim 1.

With respect to claim 10, Blank discloses the apparatus necessary to complete the recite method, as discussed above in the rejection of claim 1.

With respect to claim 11, Blank discloses the method according to claim 10, and further discloses said higher thresholds are equal to one another, and said lower thresholds are equal to one another (figure 5; column 6, lines 23-52).

With respect to claim 13, Blank discloses a device, comprising:

an acceleration circuit (figure 3, item 3; column 4, lines 31-36) configured to produce a dynamic acceleration signal corresponding to a level of acceleration in each of a plurality of detection axes (figure 3, items 32-33);

a comparator circuit (figure 3, item 34; column 5, lines 36-38 and 42-50) for each of the detection axes, configured to compare the respective dynamic acceleration signal with respective higher and lower threshold signals; and

a logic circuit (figure 3, item 34; figure 5; column 6, line 17 to column 7, line 22) configured to produce a selected logic value at an output if the dynamic acceleration signal of any of the plurality of detection axes exceeds its respective higher threshold, or if the dynamic acceleration signals of any two of the plurality of detection axes exceeds their respective lower thresholds.

Blank discloses that the evaluator (34) detects the strength and direction of acceleration to determine, via the matrix of figure 5, which signal to output.

With respect to claim 14, Blank discloses the device of claim 13, and further discloses the acceleration circuit comprises:

a sensor (figure 3, item 3; column 4, lines 31-36) configured to sense acceleration in each of the detection axes; and

a transduction circuit (figure 3, items 32-33; column 5, lines 36-38) for each of the detection axes, each transduction circuit configured to receive from the sensor an acceleration value corresponding to a level of acceleration in the respective one of the detection axes and to produce the respective dynamic acceleration signal.

With respect to claim 17, Blank discloses the device of claim 13, and further discloses the acceleration circuit comprises:

a sensor (figure 3, item 3; column 4, lines 31-36) configured to sense acceleration in each of the detection axes; and

a transduction circuit (figure 3, items 32-33; column 5, lines 36-38) configured to receive from the sensor an acceleration value corresponding to a level of acceleration in each of the plurality of detection axes, sequentially, and to produce, for each detection axis, its respective dynamic acceleration signal.

The examiner notes that the only difference between dependent claims 14 and 16 is the recitation of "sequentially," which is the subject of a §112 rejection, as provided above. Further, it is inherent that the Blank evaluator (34), which comprises a central processing unit, would calculate the code signals (CO_{1-4}) "sequentially."

With respect to claim 18, Blank discloses the device of claim 13, and further discloses the number of detection axes is two (figure 3, items 32-33).

With respect to claim 21, Blank discloses the apparatus necessary to complete the recite method, as discussed above in the rejection of claim 13.

With respect to claim 22, Blank discloses the method of claim 21, and further discloses each of the plurality of axes lies at right angles to each other (figure 3, items 32-33; column 4,lines 31-36).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

> invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 2-3, 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blank.

With respect to claim 2, Blank discloses the device according to claim 1, but does not expressly disclose said first comparator means comprise, for each said preferential detection axis, a respective first comparator, which receives the respective one of said upper thresholds and receives the respective one of said acceleration signals, and at least one first logic gate, connected to each first comparator.

It would have been obvious to a person of ordinary skill in the art that the Blank first comparison means comprises a comparator. Blank discloses that the acceleration signal is compared against a first threshold level (figure 4, G1; column 5, line 66 to column 6, line 16) to determine an acceleration code signal (figure 5, LEV1). The code signal is then output to a triggering strategy (figure 5, column 6, lines 23-52).

Further, it would be obvious to one of ordinary skill that the triggering strategy may be implemented with at least one logic gate. The examiner takes official notice that logics gates are well known in the art for calculating truth tables, such as the matrix presented by Blank in figure 5. The triggering strategy receives three code signals for each of the four detection axes within the vehicle. The matrix determines which crash event (acceleration angle and magnitude) lead to the current state of code signals. The code signals would be passed through at least one logic gate to determine which one of the twelve scenarios (acceleration events) is taking place (column 6, line 53 to column 7, line 22).

With respect to claim 3, Blank discloses the device according to claim 2, but does not expressly disclose said second comparison means comprise, for each of said preferential detection axes, a respective second comparator, which *receives* one of said lower thresholds and receives the respective one of said acceleration signals, and at least one second logic gate, connected to each second comparator.

It would have been obvious to a person of ordinary skill in the art that the Blank second comparison means comprises a comparator and at least one logic gate. Blank discloses that the acceleration signal is compared against *multiple* threshold levels (figure 4, G1-G6) to determine the different acceleration code signals (LEV1-LEV3). The code signals are then output to a triggering strategy, which comprises at least one logic gate, as discussed above.

With respect to claim 5, Blank discloses the device according to claim 1, but does not expressly discloses the ratio between the upper threshold and the lower threshold corresponding to a same one of said preferential references axes is substantially equal to $1/\sqrt{2}$. At the time of the invention by applicants, it would have been obvious to one of ordinary skill in the art to set the ratio between the upper and lower thresholds at $1/\sqrt{2}$, since it has been held that discovering the optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617, F.2d. 272, 205 USPQ 215 (CCPA 1980).

With respect to claim 12, Blank discloses the method according to claim 10, and further, the ratio between the upper and lower thresholds of $1/\sqrt{2}$ is rejected, as discussed above.

13. Claims 6-7 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blank, in view of Oguchi (US 2002/0033047).

With respect to claim 6, Blank discloses the device according to claim 1, but does not expressly disclose said inertial sensor means comprise at least one micro-electro-mechanical sensor with capacitive unbalancing.

Oguchi discloses an acceleration sensor comprising a micro-electromechanical sensor with capacitive unbalancing (figure 2; paragraphs 41-42).

Blank and Oguchi are analogous because they are from the same field of endeavor, namely acceleration force sensors.

At the time of the invention by applicants, it would have been obvious to a person of ordinary skill in the art to combine the multidirectional inertial device disclosed in Blank with the micro-electromechanical sensor with capacitive unbalancing disclosed in Oguchi.

The motivation for doing so would have been to use a force sensor with a moveable portion that naturally returns to its original position and can continually operate without constant recalibration.

With respect to claim 7, Blank and Oguchi disclose the device according to claim 6. Blank discloses using an inertial sensor means for each of said preferential axes (figure 3, items 32-33; column 4, lines 31-36) and Oguchi discloses that the inertial sensor means comprise micro-electromechanical capacitive unbalancing sensors.

With respect to claim 16, Blank discloses the device of claim 14. Blank discloses a sensor for each of the plurality of detection axes (figure 3, items 32-33; column 4,

lines 31-36) and Oguchi discloses the sensor comprises a micro-electromechanical capacitive-unbalance sensor (figure 2; paragraphs 41-42).

Blank and Oguchi are analogous as discussed above.

14. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blank, in view of Oguchi, and in further view of Ishiyama (US 6,738,214).

Blank and Oguchi disclose the device according to claim 6, but do not expressly disclose the at least one current-to-voltage converter, a subtractor node having inverting and non-inverting inputs, a filter and a rectifier.

Ishiyama discloses an acceleration force sensor (figure 3, item 19; column 4, lines 7-20) with a transduction means (figure 3, item 24; column, lines 39-51) comprising a filter (column 5, lines 5-31).

The remaining elements of claim 8 are inherent or obvious in view of Ishiyama as discussed below:

The sensors of Blank, Oguchi and Ishiyama comprise voltage outputs and the Ishiyama filter requires a voltage input. Therefor, it is unnecessary to include a current-to-voltage converter. It would have been obvious to a person of ordinary skill in the art to include a current-to-voltage converter for sensors that output a current value.

Ishiyama discloses both high-pass and a low-pass filters. Ishiyama utilizes the high-pass filter to extract the dynamic acceleration components (falling), while the low-pass filter is used to extract the static acceleration components (gravity) (column 5, lines 5-31). It would have been obvious to a person of ordinary skill in the art that the output

of a high-pass filter is equivalent to subtracting the output of a low-pass filter from the original signal.

Finally, the Ishiyama sensor outputs a digital voltage signal (column 4, lines 11-15), the filters extract the acceleration components and output a digital frequency signal to a central processing unit (column 5, lines 41-44). The digital signal processing disclosed in Ishiyama does not require a rectifier. It would have been obvious to a person of ordinary skill in the art that an analog sensor system would require passing the signal through a rectifier before the signal is input to a processor or logic gate.

Blank, Oguchi and Ishiyama are analogous because they are from the same field of endeavor, namely acceleration force sensors.

At the time of the invention by applicants, it would have been obvious to a person of ordinary skill in the art to combine the multidirectional inertial device disclosed in Blank and Oguchi with the transduction means disclosed in Ishiyama.

The motivation for doing so would have been to extract the dynamic and/or static acceleration components of the force sensor output signal.

15. Claims 15 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blank, in view of Ishiyama.

With respect to claim 15, Blank discloses the device of claim 14, but does not expressly disclose each of the transduction circuits is configured to subtract, from the respective acceleration value, a respective static acceleration value, thereby producing the respective dynamic acceleration signal.

Ishiyama discloses utilizing a high-pass filter to extract the dynamic acceleration signal (column 5, lines 5-31). As discussed above in the rejection of claim 8, it would have been obvious that a high-pass filter output is equivalent to subtracting a low-pass filter output from the original signal.

Blank and Ishiyama are analogous, as discussed above.

With respect to claims 19-20, Blank discloses the device of claim 13. Ishiyama discloses the device further comprises a portable computer (column 3, line 11 to column 4, line 6). The Ishiyama acceleration sensor detects when the device is falling and shuts off sensitive internal components. Further, it would have been obvious to a person of ordinary skill in the art that to combine the device with a cell phone. The motivation for doing so would have been because a cell phone is small portable electronic device that may be dropped and is subjected to internal component damage, similar to a portable computer.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

e. Kunimi (US 6,353,782) discloses a 2-axis acceleration sensor where each preferential detection axis is compared against multiple threshold levels and then passed through logic gates to activate a device from standby.

f. Ohnishi (US 6,512,310) discloses a micro-electromechanical acceleration sensor that is compared against multiple threshold levels.

g. Okeya (US 6,320,822) discloses a portable acceleration sensor that detects when the device is being handled by a user and activates from a standby state.

h. Zerbini (US 6,858,810) discloses an acceleration sensor in a cell phone.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adi Amrany whose telephone number is (571) 272-0415. The examiner can normally be reached on weekdays, from 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571) 272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AA

BURTON S. MULLINS
PRIMARY EXAMINER